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EP-A- 0 101 306
EP-A- 0 188 005
US-A- 4 041 203
US-A- 4 042 740

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Description

This invention relates to material for use as a mat or the like intended to be positioned, for example, at the entrance from a dirty area to a clean area e.g. at the door of a house or at a location where there is likely to be spillage of liquid such as a kitchen or the area surrounding a vending machine in an office or factory.

Hitherto such mats have normally been made, for example, of tufted fabric. However, proposals have been made for a sheet of mat material to be held in a holder, the sheet being disposable and being made of relatively cheap and absorbent material such as paper.

One suitable type of disposable mat material is disclosed in published European Application No. EP-A-0188005. The mat described in that specification essentially comprises a wear surface layer made of non-woven continuous filament nylon and an absorbent inner layer made of a mixture of polymeric microfibres and wood pulp, a liquid impervious backing layer being normally provided. The layers of material are intermittently bonded to prevent separation in use.

Material in accordance with the present application suitable for a disposable mat is defined in the accompanying Claim 1 and comprises an abrasion resistant pervious outer layer of a non-woven web of spunbonded polypropylene (either continuous or non-continuous) and an inner absorbent layer of microfibres and, preferably absorbent particles and/or fibres, the abrasion and absorbent layers being bonded intermittently by ultrasonic or thermal bonding, the bonds penetrating (burning) through the outer layer so as to join the fibres in the outer layer with similar fibres in the absorbent layer.

The bond areas thus form 'pockets' in the outer abrasion resistant layer which 'pockets' tend to give an enhanced and desirable roughness to that layer and also act to hold dirt and dust.

The bonds are preferably positioned close together (for example about 3.5 mm apart) to give good abrasion characteristics and the pattern of bonds is preferably that of a diamond or square.

The bonds are preferably created by ultrasonic or thermal bonding which acts to burn through the outer layer and create molten bonds between the fibres in the outer and central layers.

The abrasion resistant layer is preferably non-woven spun bonded polypropylene which is treated with or contains a surfactant to increase the wetability. It has a basis weight of about 100 grammes per square metre.

The relatively absorbent inner or central layer preferably comprises meltblown polymeric fibres e.g., polypropylene and wood pulp fibres giving good absorbency together with a relatively coherent structure due to the entanglement of the fibres and pulp. Other absorbent particles or fibres may be used.

Preferably, the central "layer" has 30% polypropylene and 70% wood pulp with the basis weight being 190 grammes per square metre. This absorbent central layer is preferably also treated with a surfactant.

A waterproof backing layer is preferably provided which may conveniently be a sheet of 38 microns polyethylene, the backing sheet being stuck or otherwise joined to the absorbent inner layer either by the same bonding process which acts to bond the abrasion resistant and the absorbent layers or preferably with adhesive of the like to prevent holes being punched through the complete material which may act to nullify the effect of the waterproof barrier.

An example of mat material in accordance with the invention is illustrated in the accompanying sketch drawings in which:

Figure 1 is a perspective view of a 'cut away' cover of the material,

Figure 2 is an 'end on' view of a cover of the material,

Figure 3 is a cross section, to an enlarged scale, taken between bond areas, and

Figure 4 is a cross section of the material taken through a bond area.

Referring to the drawings, the material comprises an absorbent resistant outer layer 2 of spun bonded polypropylene which is joined to an inner absorbent layer 4 of meltblown microfibres and absorbent pulp fibres by means of a series of closely spaced bond areas 6 formed in a rectangular or diamond pattern. The distance between adjacent bond areas is about 3.5 mm and the distance between the parallel lines of the bond pattern is about 38 mm.

The bond areas 6 are in the form of depressions in the outer surface of the abrasion resistant layer 2 providing 'pockets' in which dirt or dust can be trapped. The bond areas 6 are burnt through the outer layer during manufacture so as to join the polymeric continuous fibres of the outer layer with molten polymeric fibres in the central absorbent layer 4. This creates a very good and strong connection between the two layers whilst, at the same time, allowing liquid to pass readily from the pervious outer layer 2 to the absorbent inner layer 4 in paths between bonds as illustrated at X in Figure 3.

A plain waterproof backing sheet 8 of polyethylene is attached to the outer side of the central absorbent layer 4.

In use, the mat material will be releasably held in a holder such as, for example, in that claimed in British Patent GB-A-2 168 894 or British Patent

GB-A-2 195 080.

It will of course be appreciated that materials other than those specified may be used for the various layers. For example, the outer layer may be of meltblown non-continuous fibres.

Claims

1. Disposable mat material comprising an abrasion resistant pervious layer and an absorbent layer of microfibres, the pervious and absorbent layers being bonded intermittently by ultrasonic or thermal bonding, characterised in that the abrasion resistant pervious layer (2) comprises a non-woven web of spunbonded polypropylene and in that the bonds (6) burn through the pervious layer (2) to create molten bonds (6) throughout the thickness of the material, the bonds forming 'pockets' on the outer surface of the material to give an enhanced roughness to the the material.

2. Material as claimed in Claim 1 characterised in that absorbent particles and/or fibres are incorporated into the absorbent layer of microfibres.

3. Material as claimed in either Claim 1 or 2 characterised in that the bonds are arranged in a diamond or square pattern.

4. Material as claimed in Claim 3 characterised in that the distance between bond areas is about 3.5 mm and the distance between the parallel lines of the bond patter is about 38 mm.

5. Material as claimed in any of the preceding claims characterised in that the pervious layer is treated with, or contains, a surfactant.

6. Material as claimed in any of the preceding claims characterised in that the absorbent layer comprises meltblown polymeric fibres and wood pulp fibres.

7. Material as claimed in Claim 6 characterised in that the absorbent layer comprises about 30 percent polypropylene fibres and 70 percent wood pulp, the basis weight being about 190 grammes per square metre.

8. Material as claimed in any of the preceding claims characterised in that a waterproof backing layer is positioned on the other side of the absorbent layer from the outer abrasion resistant layer.

9. Material as claimed in Claim 8 characterised in that the backing sheet is joined to the absorbent inner layer either by the same bonds which act to bond together the abrasion resistant and the absorbent layers, or with an adhesive or the like.

Revendications

1. Matériau pour tapis à jeter comprenant une couche perméable résistante à l'abrasion et une couche absorbante en microfibres, les couches perméable et absorbante étant collées de façon intermittente par une liaison ultrasonore ou thermique, caractérisé en ce que la couche perméable résistante à l'abrasion (2) se compose d'une nappe non tissée de polypropylène non tissé et en ce que les liaisons (6) traversent sous l'effet thermique la couche perméable (2) pour créer des liaisons fondues (6) dans toute l'épaisseur du matériel, les liaisons formant des "poches" sur la surface externe du matériel afin d'intensifier la rugosité du matériel.

2. Matériel selon la revendication 1, caractérisé en ce que des particules et/ou fibres absorbantes sont incorporées à la couche absorbante de microfibres.

3. Matériel selon la revendication 1 ou la revendication 2, caractérisé en ce que les liaisons sont disposées selon un dessin en losanges ou carrés.

4. Matériel selon la revendication 3, caractérisé en ce que la distance entre les zones de liaison est d'environ 3,5 mm et la distance entre les lignes parallèles du dessin de liaison est d'environ 38 mm.

5. Matériel selon l'une des revendications précédentes, caractérisé en ce que la couche perméable est traitée au moyen d'un agent tensioactif ou en contient un.

6. Matériel selon l'une des revendications précédentes, caractérisé en ce que la couche absorbante comporte des fibres polymères fusionnées par soufflage et des fibres cellulosiques.

7. Matériel selon la revendication 6, caractérisé en ce que la couche absorbante comporte environ 30 pour cent de fibres de polypropylène et 70 pour cent de cellulose, le grammage représentant environ 190 grammes par mètre carré.

8. Matériel selon l'une des revendications précédentes, caractérisé en ce qu'une sous-couche

étanche est placée sur la couche absorbante sur le côté opposé à la couche externe résistante à l'abrasion.

9. Matériel selon la revendication 8, caractérisé en ce que la sous-toile est collée à la couche interne absorbante par les mêmes liaisons assurant le collage de la couche résistante à l'abrasion sur la couche absorbante, ou par un produit adhésif ou similaire.

Patentansprüche

1. Wegwerfbares Mattenmaterial mit einer scheuerbeständigen durchlässigen Schicht und einer absorbierenden Schicht aus Mikrofasern, wobei die durchlässigen und absorbierenden Schichten intermittierend durch Ultraschall- oder Wärmebindung gebunden werden, dadurch gekennzeichnet, dass die scheuerbeständige durchlässige Schicht (2) eine ungewebte Bahn von spinngebundenem Polypropylen enthält, und dass die Bindungen (6) durch die durchlässige Schicht (2) brennen, um geschmolzene Bindungen (6) durch die Dicke des Materials herzustellen, wobei die Bindungen 'Taschen' auf der äusseren Oberfläche des Materials bilden, um dem Material eine verstärkte Rauheit zu verleihen.

2. Material nach Anspruch 1, dadurch gekennzeichnet, dass die absorbierenden Teilchen und/oder Fasern in die absorbierende Mikrofaserschicht eingebaut sind.

3. Material nach entweder Anspruch 1 oder 2, dadurch gekennzeichnet, dass die Bindungen in einem Diamant- oder Quadratmuster angeordnet sind.

4. Material nach Anspruch 3, dadurch gekennzeichnet, dass die Entfernung zwischen Bindungsgebieten ungefähr 3,5 mm ist, und die Entfernung zwischen parallelen Linien des Bindemusters ungefähr 38 mm ist.

5. Material nach einem der vorhergehenden Ansprüche, dadurch gekennzeichnet, dass die durchlässige Schicht mit einem Benetzungsmittel behandelt wird oder es enthält.

6. Material nach einem der vorhergehenden Ansprüche, dadurch gekennzeichnet, dass die absorbierende Schicht schmelzgeblasene polymerische Fasern und Zellstoffasern enthält.

7. Material nach Anspruch 6, dadurch gekennzeichnet, dass die absorbierende Schicht ungefähr 30 Prozent Polypropylenfasern und 70 Prozent Zellstoff enthält, wobei das Basisgewicht ungefähr 190 Gramm pro Quadratmeter ist.

8. Material nach einem der vorhergehenden Ansprüche, dadurch gekennzeichnet, dass eine wasserdichte untere Schicht auf der anderen Seite der absorbierenden Schicht von der äusseren scheuerbeständigen Schicht liegt.

9. Material nach Anspruch 8, dadurch gekennzeichnet, dass die untere Schicht mit der absorbierenden inneren Schicht entweder durch dieselben Bindungen, die wirksam sind, die scheuerbeständigen und absorbierenden Schichten zusammenzubinden, verbunden ist, oder mit einem Klebstoff oder dergleichen.

Fig.1.

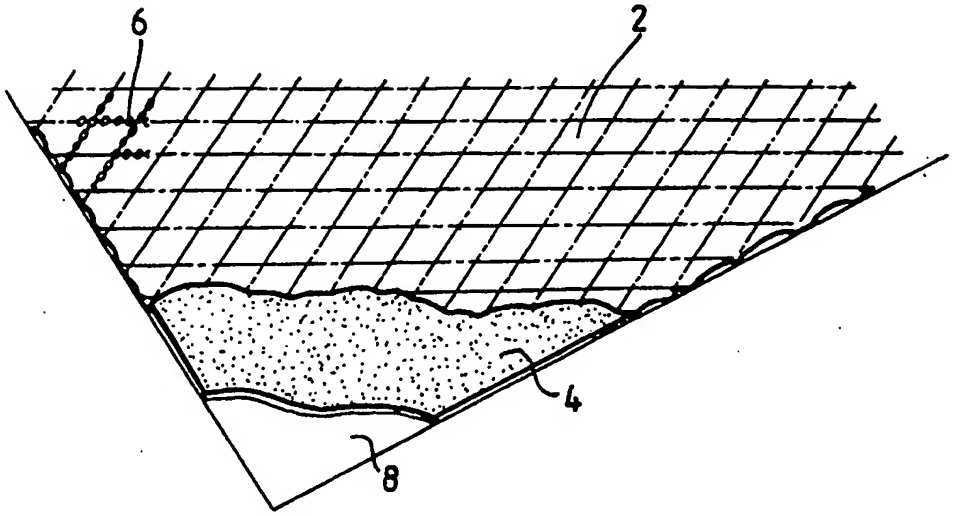

Fig.2.

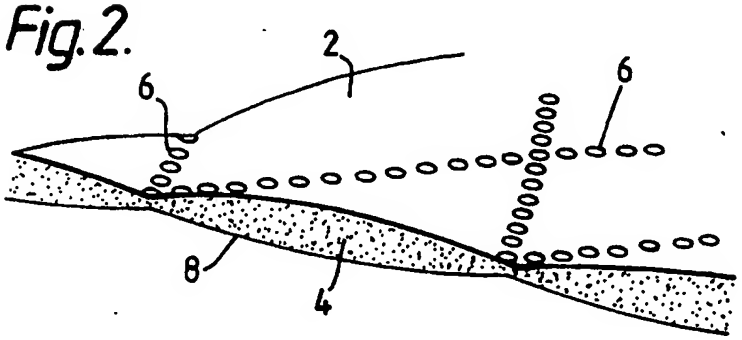

Fig.3.

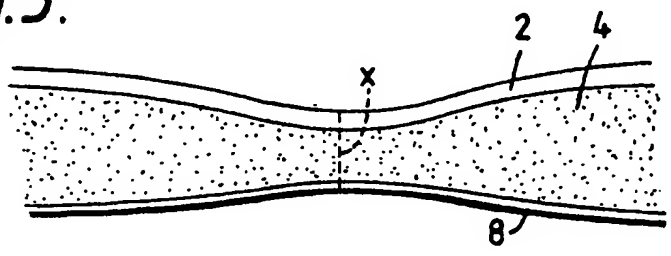

Fig.4.